In the Specification:

On page 1, after the title insert the following:

RELATED APPLICATIONS

This is a U.S. national stage of application No. PCT/DE2004/001593, filed on 22 July 2004.

On page 1, before lime 11, insert the following heading:

FIELD OF THE INVENTION

On page 1, before line 20, insert the following heading:

BACKGROUND OF THE INVENTION

On page 1, before line 37, insert the following heading:

SUMMARY OF THE INVENTION

On page 1, amend the paragraph beginning on line 37 through page 2, line 6 as follows:

~~The present invention is based on the object of providing~~ One object of the present invention is to provide an improved method for the production of optoelectronic semiconductor chips of the type mentioned in the introduction.

A further object of the present invention is to provide a semiconductor chip produced according to such a method which has improved properties compared with conventional semiconductor chips.

On page 2, delete the paragraph beginning on line 8 through line 12 in its entirety.

On page 2, delete the paragraph beginning on line 14 through line 34 in its entirety and insert the following:

A method for the production of a plurality of optoelectronic semiconductor chips each having a plurality of structural elements with respectively at least one semiconductor layer, comprising the steps of providing a chip composite base having a substrate and a growth surface. A mask material layer is formed on the growth surface, with a multiplicity of windows, most of which have an average extent of less than or equal to 1 μm, wherein a mask material is chosen in such a way that a semiconductor material of the semiconductor layer that is to be grown in a later method step essentially cannot grow on said mask material or can grow in a substantially worse manner in comparison with the growth surface. Semiconductor layers are grown essentially simultaneously on regions of the growth surface that lie within the windows, and the chip composite base with applied material is singulated to form semiconductor chips.

On page 2, amend the paragraph beginning on line 36 through page 3, line 4 as follows:

In this context, propagation (which is used interchangeably herein with "average extent") is to be understood as the length of a window projected onto a straight line, the straight line running in a principal extending plane of the mask material layer. The average propagation is accordingly the propagation of a window averaged over all directions.

On page 3, amend the paragraph beginning on line 13 as follows:

~~Preferably, the~~ The chip composite base ~~has~~ can have at least one semiconductor layer grown epitaxially onto the substrate. In this case, the growth surface is a surface on that side of the epitaxially grown semiconductor layer which is remote from the substrate.

On page 4, amend the paragraph beginning on line 4 as follows:

After the growth of the semiconductor layers of the structural elements, a layer made of electrically conductive contact material that is transmissive to an electromagnetic radiation emitted by the active zone can be ~~is preferably~~ applied to said semiconductor layers, so that semiconductor layers of a plurality of structural elements are electrically conductively connected to one another by the contact material. It is thereby possible to form electrical contact structures in a simple manner which additionally absorb a small proportion of electromagnetic radiation generated in the component.

On page 4, amend the paragraph beginning on line 29 as follows:

The planarization layer ~~preferably has~~ can have a material having dielectric properties.

On page 4, amend the paragraph beginning on line 32 through page 5, line 2 as follows:

In the growth of the semiconductor layers of the structural elements, the growth conditions ~~are preferably~~ can be set and alternatively or additionally varied during growth in such a way that the semiconductor layers are formed with a form that is advantageous for the coupling-out of electromagnetic radiation, for example an at least appropriately lenslike form.

On page 5, amend the paragraph beginning on line 4 as follows:

The mask material layer and the semiconductor layers ~~are particularly preferably~~ can be grown by means of metal organic vapor phase epitaxy (MOVPE).

On page 5, delete the paragraph beginning on line 12 through line 16 in its entirety.

On page 5, before line 18, insert the following heading:

BRIEF DESCRIPTION OF THE DRAWINGS

On page 5, before line 30, insert the following heading:

DETAILED DESCRIPTION OF THE DRAWINGS

On page 7, amend the paragraph beginning on line 16 as follows:

The production of a non-closed Si_xN_y layer is effected for example in an MOVPE reactor by admitting SiH_4 and NH_3 at a suitable reactor temperature, which may typically lie in a range of between 500 and 1100°C. However, the reactor temperature may also lie above or below this range. Such methods are described for instance in Hageman, P.R. et al.,"Improvement of the Optical and Structural Properties of MOCVD Grown GaN on Sapphire by an in-situ SiN Treatment," phys. stat. sol. (a) 188, No. 2 (2001), 659-662, the content of which is in this respect hereby incorporated by reference. As an alternative, the Si source used may also be tetraethyl-silicon ($Si(C_2H_5)_4$) or a similar Si-containing compound which is suitable for epitaxy.

On page 7, amend the paragraph beginning on line 29 through page 8, line 2 as follows:

In the growth stage shown in Figure 1D, the mask material layer 11 has been fully formed. It has a plurality of statistically distributed (i.e, not positioned in a regular array) windows 2 having varying forms and opening areas. The deposition conditions are chosen such that most of the windows have an average extent of less than 1 μm. By means of a small extent of the windows it is possible to produce more and smaller structural elements and e.g. to achieve improved coupling-out of radiation from the component structures.

On page 8, amend the paragraph beginning on line 15 as follows:

A semiconductor layer sequence 8 forms a structural element 12 with each of said windows 2 having a structural element 12 associated with it. In the sense of the invention, it is also possible in this case for semiconductor layers of a plurality of structural elements to overlap or for a plurality of structural elements to have at least one common semiconductor layer. This is the case for example if semiconductor layer sequences 8 grow laterally over the mask material layer to an extent such that semiconductor layers of adjacent structural elements 12 partly or wholly accrete. In such cases a boundary between two adjacent structural elements runs along a line along which semiconductor material situated on the mask material layer has a minimum thickness.

On page 9, amend the paragraph beginning on line 7 as follows:

By virtue of the fact that the windows have opening areas of different magnitudes, different material compositions result for the layers of the semiconductor layer sequences 8 that are deposited therein. This is an effect of the so called selective growth epitaxy. Generally, the semiconductor alloys grown will comprise the same elements, but there is a variation in alloy composition depending on the window sizes. The reason for this effect is that different elements of the alloys to be grown have different diffusion constants for diffusion on the mask material. In the case of structures emitting electromagnetic radiation, different emission spectra consequently result, so that with radiation-emitting components of this type it is possible overall to achieve a broader emission spectrum than with conventional components.